

1	ELECTRIC MOTOR WITH NONMOTOR DRIVING MEANS (E.G., AXLE DRIVE, MANUAL DRIVE)	568.13	....With particular program teaching method
2	.Manual driving means	568.14	.....Manual lead through
3	WITH PARTICULAR MOTOR-DRIVEN LOAD DEVICE	568.15	....With particular interpolation means
4	.Plural, diverse or diversely controlled load device	568.16	....With particular sensing device
5	..Plural motor drive	568.17	....With multimode control (e.g., course-fine, position-force, etc.)
6	.Tension-maintaining type of motor-control system	568.18	.....Including velocity control
7	..Plural, diverse or diversely controlled motors	568.19	....With particular coordinate transformation means
8	.Plural, diverse or diversely controlled driving motors (e.g., driving differential gearing)	568.2	....With plural control systems (e.g., the interaction of plural processors to control the plural joints of a single robot):
9	.Power- or motion-transmitting mechanism	568.21	.....Including end effector (e.g., gripping jaw, micromanipulator, etc.)
10	..Reversible drive mechanism	568.22	....With particular compensation (e.g., gain, offset, etc.)
11	..Variable speed mechanism	568.23	.....Including program modification
12	...Gearing	568.24	....With reliability enhancement means (e.g., monitoring, redundant circuits, etc.)
13	....Differential type	568.25	.....Including display device
14	..Motion-converting mechanism	569	..Digital or numerical systems
15	..Mechanical gearing	570	...Contouring systems
16	SUPPLIED OR CONTROLLED BY SPACE- TRANSMITTED ELECTROMAGNETIC OR ELECTROSTATIC ENERGY (E.G., BY RADIO)	571	....With "feed-rate" control
17	PORTABLE-MOUNTED MOTOR AND/OR PORTABLE-MOUNTED ELECTRICAL SYSTEMS THEREFOR	572	....With "zero-offset" or tool radius correction
560	POSITIONAL SERVO SYSTEMS (E.G., SERVOMECHANISMS)	573	....With interpolating means
561	.Adaptive or optimizing systems including "bang-bang" servos	574	....Multiple axes point to point systems
562	.Time-sharing or multiplexing systems	575	..Multiple axes analog systems
563	.With protective or reliability increasing features (e.g., "fail-safe" systems)	576	...Nonmechanical line, seam or edge followers
564	.. "Redundant" operating channels	577	....Optical or photoelectric line followers
565	..Monitoring systems	578	...Cam or template followers
566	..Maneuver, force, or load- limiting	579	...Multiple pass systems
567	.Program- or pattern-controlled systems	580	.Vehicular guidance systems with single axis control
568.1	..With program recording or composing means	581	..Radio-controlled
568.11	...Multifunction manipulator (i.e., Robot)	582	..Celestial navigation
568.12	....Mobile robot	583	..Landing systems
		584	..Altitude or pitch control
		585	..Roll control
		586	..Yaw control
		587	..Land vehicles

588	..Marine vehicles	625	.Plural servomotors
589	...Submarine and torpedo systems	626	.Limit or end-stop control
590	.Multiple mode systems	627	..Secto-scanning systems
591	..With mode-engagement features (e.g., manual to automatic)	628	."Feelback" systems
592	..Fine and coarse systems	629	.Unwanted harmonic or voltage component elimination
593	...Separate fine and coarse motors		quadrature rejection systems
594	...Digital systems	630	.Antibacklash systems (e.g., with unidirectional approach to balance)
595	...Multiple speed synchro systems	631	.Antistatic friction features (e.g., "dither" voltage)
596	..Combined "on-off" and proportional control	632	.With compensating features
597	..Slewing systems	633	.."Two-cycle error" compensation
598	...With a separate slewing motor	634	..Temperature compensation
599	.Pulse-width modulated power input to motor (e.g., "duty cycle" systems)	635	.With signal-, voltage-, or current-limiting
600	.Digital or numerical systems	636	."Sampling" systems including miscellaneous "sampled data" control systems
601	.Digital comparison	637	.Analog computation
602	...Commutating switch-type encoder	638	.With particular "error- detecting" means
603	..Pulse-counting systems	639	..Plural, diverse conditions
604	..Analogue comparison	640	..Photoelectric or optical-type measuring instruments
605	...Synchro or resolver (e.g., transmitter simulators)	641	..With particular temperature measuring instrument
606	.Frequency- or phase-modulated systems	642	..With liquid level measuring instruments
607	..Frequency comparison	643	..With moisture content or wetness measuring instruments
608	..Phase comparison	644	..With flow measuring instruments
609	."Reset" systems (P.I.)	645	..With fluid pressure measuring instruments
610	..With rate (P. I. D.) (e.g., reset windup prevention)	646	..With force or weight measuring instruments
611	..With stabilizing features (e.g., anti-hunting, damping)	647	..With magnetic field measuring instruments
612	..Electric braking near balance (e.g., dynamic)	648	..With inertial, direction or inclination measuring instrument
613	...D.C. in A.C. windings	649	...Stable platforms
614	..Friction-braking near balance including magnetic or eddy current brakes	650	..With current, voltage or electrical power measuring instruments
615	..By auxiliary feedback loop	651	..With acceleration measuring instruments
616	...Rate feedback	652	..With particular position measuring instruments
617	....Variable rate feedback	653	...Magnetic transducers
618	....Tachometer feedback	654	...Synchro control transmitter- transformer systems
619	..Variable gain bandwidth	655	....With synchro differential
620	..Nonlinear circuits		
621	..Lead or lag networks		
622	...A.C. networks		
623	..Load stabilization (e.g., viscous, magnetic or friction dampers)		
624	..By deadband at null (e.g., threshold circuits)		

656	...Differential transformer systems	692	.Having induction or "selsyn" type transmitter
657	....Linear differential transformer	693	.Having impedance-type transmitter
658	...."E" type transformer	694	.Having commutated dynamoelectric machine transmitter
659	...."Microsyn" type	695	.Having commutating switch-type transmitter
660	...."Inductosyn" systems	696	OPEN-LOOP STEPPING MOTOR CONTROL SYSTEMS
661	....Resolver systems	34	PLURAL, DIVERSE OR DIVERSELY CONTROLLED ELECTRIC MOTORS
662	...Variable capacitor systems	35	.Motors with diverse motions (e.g., reciprocating and rotary motors)
663	...Potentiometer systems including autotransformers and Wheatstone bridges	37	.Plural reciprocating or oscillating motors
664	....Minor arc seeking	38	.Plural linear-movement motors
665	....Continuous rotation, unlimited range	39	.Work and feed motors (e.g., indexing)
666	....Controlled tap and slidewire	40	.Motor biased against rotation
667	....With a bridge in the feedback circuit	41	.Having electrical synchronizing interconnections
668	....Recalibrating systems	42	..Between windings on auxiliary dynamo-electric machines
669	...Standing wave	43	..D.C. or A.C. commutator motors with slip rings
670	...Contact resistance	44	..Between induction motor secondaries
671	.With particular motor control system responsive to the "actuating signal"	45	.Mechanically coupled in fixed ratio of movement
672	..Discontinuous or "on-off" control	46	..Motors having unlike operating characteristics
673	...Seeking switch type	47	...Synchronous and nonsynchronous motors
674	...Wheatstone bridge type	48	..Mechanically coupled in torque opposition
675	..One transmitter or controller element follows another	49	.Motors electrically connected in cascade or tandem
676	..Transmitter or controller element returned (e.g., force balance systems)	50	..With means for effecting other motor interconnections
677	..With particular servoamplifier	51	.Plural, diverse motor controls for different motors
678	...Differential amplifier	52	.Slipping and/or racing control for electric motors
679	...Diverse types of amplifiers in different stage	53	.Plural, diverse motor controls
680	...Magnetic servoamplifiers	54	..Motor-reversing
681	...Solid-state servoamplifiers	55	...With running-speed control
682	...Rotating amplifier (e.g., "Ward Leonard" control)	56	....And braking
683	..With particular phase discriminator	57	...And braking
684	..With particular modulator or detector (e.g., choppers)	58	...And acceleration control
685	.. "Step-by-step" motors in closed-loop servos	59	..Running-speed control
686	..Reciprocating or oscillating motors	60	...And braking
687	..Linear movement motors	61	...And acceleration control
688	..Shaded pole motors		
689	TORQUING MOTORS		
690	SELF-SYNCHRONOUS TYPE OF MOTOR		
691	.With means to amplify transmitter signals		

62	...And automatic starting and/or stopping and/or with time delay	92	..Control of both armature (or primary) and field (or secondary) circuits
63	..Braking	93	...Series-parallel connected armature or primary circuits
64	..Acceleration control	94	..Armature or primary circuit control
65	..Motor-reversing	95	...Series-parallel connections
66	..Running-speed control	96	....With armature circuit impedance
67	..Diverse speeds for different motors	97	..Field or secondary circuit control
68	..Relative motor speed control	98	.Load control
69	...With speed-difference detector	99	..Fixed ratio of load or current division
70	....Electrical-type detectors	100	...By field or secondary circuit control
71	.....Voltage and/or current difference detector	101	.Starting and/or stopping
72	.....Dynamoelectric machine detector	102	..Sequential or successive starting and/or stopping
73	.....Synchronously operated impedance detectors	103	..Selective starting and/or stopping
74	.....Synchronously actuated switch detectors	104	..Armature (or primary) circuit control
75	.....Plural switches connected in series	105	.Plural, diverse or diversely controlled sources of armature (or primary) supply
76	....Differential-gearing detector	106	..Diverse sources
77	...Controlling motor speed in response to speed of another motor	107	...A.C. and D.C.
78	....Controlling A.C. frequency or rate of electrical impulses to other motor	108	....Different voltages
79	...Control of both armature (or primary) and field (or secondary) circuits	109	...Different voltages
80	...Armature or primary circuit control	110	...Different frequencies
81	...Field secondary circuit control	111	.Series-parallel connected motors
82	..Armature or primary circuit control	112	.Parallel connected motors
83	...Series-parallel armature circuit connections	113	.Series connected motors
84	..Field or secondary circuit control	114	IMPACT, MECHANICAL SHOCK, OR VIBRATION-PRODUCING MOTORS
85	.Synchronizing or phasing control	115	MOTOR WITH DIVERSE MOTIONS (E.G., ROTARY AND RECIPROCATING)
86	.Braking	116	NONMAGNETIC MOTOR
87	..Motor used as braking generator (dynamic braking)	117	.Thermoelectric motor
88	...Load or current division during braking	118	MAGNETOSTRICTIVE MOTOR
89	...Motor as exciter for another motor	119	RECIPROCATING OR OSCILLATING MOTOR
90	.Acceleration control	120	.Stopping after predetermined number of reciprocations or cycles (including single cycle)
91	..Accelerating motors in succession or selectively	121	.Having means to produce a progressing or traveling motor field flux
		122	.Plural, diverse or diversely controlled motor windings

123	..Polyphase or diverse or diversely controlled sources of motor supply	149	.With plural, diverse or diversely controlled generators
124	...A.C. and D.C. sources	150	.With flywheel on generator or on motor
125	..Unidirectionally conductive devices in energizing circuit	151	.Control of both the generator and the circuit to the motor
126	.Energizing winding circuit control	152	..With motor control
127	..Automatic in response to predetermined position, movement or condition in or of the motor or driven device	153	.Control of both the generator and the motor
128	...Noise, sound, vibration, movement or position of motor	154	..Control of excitation (field) circuit of both
129	..By means for producing periodic electrical pulses in the energizing circuit	156	.Plural, diverse or diversely actuated, generator control means
130	...Electrical oscillation or condenser charging and/or discharging circuits	157	.Generator speed control
131	...Motor or escapement-controlled means	158	.Generator field circuit control
132	..By space-discharge or unidirectionally conductive devices in energizing circuit	159	HAVING ROTOR ELEMENT BIASED AGAINST ROTATION
133	..By impedance devices in energizing circuit	160	.By resilient biasing means (e.g., spring)
134	..By circuit making and/or braking devices	161	WITH FLYWHEEL OR MASSIVE ROTARY MEMBER
135	LINEAR-MOVEMENT MOTORS	162	CONTROL BY PATTERNS OR OTHER PREDETERMINED SCHEDULE MEANS
136	AUXILIARY MEANS FOR PRODUCING MECHANICAL STARTING OR ACCELERATING TORQUE	163	.Motor running-speed control
137	.By auxiliary motor	164	..Cyclically varying or repeated speed schedules
138	SPACE-CHARGE-DEVICE COMMUTATED MOTOR	700	SYNCHRONOUS MOTOR SYSTEMS
139	BATTERY-FED MOTOR SYSTEMS	701	.Hysteresis or reluctance motor systems
140	GENERATOR-FED MOTOR SYSTEMS HAVING GENERATOR CONTROL	702	.Antihunting or damping
141	.Automatic generator control and/or with time-delay means	703	.Braking
142	..Responsive to diverse conditions or with time-delay means	704	.Pole changing motor winding circuits
143	...Plural electrical conditions	705	.Synchronization systems
144	..Armature or primary current of motor	706	..With armature power removal upon failure to synchronize or loss of synchronism
145	..Terminal voltage or counter e.m.f. of motor	707	...Upon failure to resynchronize
146	..Speed of motor or driven device	708	...Responsive to thermal electrical element in system
147	..Speed or frequency of generator or its drive means	709	..Having different armature voltage prior to synchronism
148	.Alternating-current-motor system	710	..With d.c. field removal
		711	...With electronic control element in system
		712	..With field excitation application
		713	...Responsive to slip voltage frequency in d.c. field winding
		714	...Responsive to armature current
		715	...Responsive to rotor speed or rotor driven member

716	.Field winding circuits	751	...Split phase motor with capacitor interchangeably connected in series with either primary winding
717	..Responsive to a motor condition		
718	...Induced voltage in field winding		
719	...Speed responsive field power sources	752	...With controlled electronic device to provide the series connection
720	.Armature winding circuits		
721	..Responsive to rotor shaft position or speed	753	...With de-energizable start winding
722	..Having electronic power conversion circuit	754	...With separate winding or winding portion energized for each direction of rotation
723	..Having variable frequency supply	755	...Automatic current reversal on start winding
724	..Having a plurality of windings or winding portions	756	..With controlled electronic switch for phase reversal
725	REPULSION MOTOR SYSTEMS	757	.Braking
726	.With added motor winding or convertible to series motor	758	..With diverse operation
727	INDUCTION MOTOR SYSTEMS	759	..Dynamic braking
728	.Repulsion start	760	...Direct current primary winding braking circuit
729	.Power-factor control		
730	.With plural separately movable rotors	761	...Rotating rotor controls braking current in primary winding
731	.With voltage source connected to motor secondary	762	...With a.c. to d.c. conversion circuit
732	..Electronic device controls current in secondary circuit	763	..Reversal of power to primary winding
733	..Commutator connected to secondary winding	764	...Three phase power reversal
734	..Slip rings connected to secondary winding	765	..Eddy current braking circuits
735	...Rotor shaft coupled to dynamoelectric machine	766	.Primary and secondary circuits
736	....Slip rings connected to dynamoelectric machine winding	767	.Primary circuit control
737	.Self-cascaded motor windings	768	..Three phase motor operated from single phase source
738	.With commutated winding	769	...With dynamoelectric converter
739	.Reversing	770	..Dual voltage motors
740	..With diverse motor operation	771	..Delta-wye, plural wye, or plural delta connected primary windings
741	...With braking		
742	....Electromagnetic brakes	772	..Plural speed
743	.....Generator action	773	...Pole changing
744	.....Plugging	774	....Single phase motor
745	..With controlled saturable reactor in primary circuit	775	.....Separate primary running winding for each pole number, alternately energized
746	...Two phase motor	776	.....Entire primary running winding energized for each running speed
747	..Two phase motor		
748	...With plural primary windings or winding portions having common connection	777	....Separate primary running winding for each pole number, alternately energized
749	..Operating from a single phase source	778	..Starting control
750	...Shaded pole motor	779	...With speed control

780	...Three phase motor with variable transformer to initially adjust voltage to motor windings	809	...With voltage phase angle control
781	...Operating from a single phase source	810	...With voltage pulse time control
782	....With protective features	811	....Pluse width modulation or chopping
783	.....Thermal starting and thermal overload protection	812	..Voltage control
784	....Impedance for reducing current during starting operation	813	...With transformer
785	....Start winding removed during running operation	814	...With impedance control
786	.....By electronic switch	815	....Saturable reactor
787	.....With transformer for sensing the run winding current	816	...Single phase, split phase motors
788	.....With variable temperature coefficient resistor in switch control circuit	817	....With capacitor
789	.....By electromagnetic switch	818	.Secondary circuit control
790	.....With relay coil in series with main winding	819	..Open secondary member or portion thereof with means to open or close the circuit thereto
791	.....By thermal switch	820	..Closed secondary member or member portion with means to change electrical characteristics thereof
792	.....With variable temperature coefficient impedance element	821	..Impedance control of secondary circuit
793	.....By centrifugal switch	822	...Responsive to motor condition
794	....Capacitor run motor with different capacitance at starting	823	....Rotor speed or position responsive
795	.....With plural capacitors	824	....Centrifugal force of rotor controls secondary circuit impedance
796	....Saturable winding in capacitor run motor circuit	825	....Induction motor current
797	....Phase splitting using stator winding mutual inductance or saturable winding	826	....Primary motor current
798	..Responsive to motor condition	827	....Frequency of secondary current
799	...Responsive to speed or rotation phase angle	828	....Secondary voltage
800	....With controlled power conversion	829	...By manual operation
801	.....Including inverter	830	.With relatively movable cooperating motor parts to control energized motor
802	.....Responsive to an additional condition	831	..Axially movable cooperating parts
803	.....With controlled a.c. to d.c. circuit in inverter supply	832	..Dual stators, one or both angularly movable
804	....With controlled magnetic reactance	244	ALTERNATING CURRENT COMMUTATING MOTORS
805	...Responsive to motor voltage	245	.Universal or A.C.-D.C. motors
806	..Condition responsive	246	SERIES MOTORS
807	..Frequency control	247	.Convertible for nonseries motor operation
808	...With voltage magnitude control	248	.With plural, diverse or diversely connected or controlled sources of e.m.f.
		249	.Control by motor circuit impedance

250	..Impedance in series with field windings and in parallel to armature winding	284	..With means to delay reversing until motor substantially stops
251	..Field circuit control	285	..Instant of, or passage or predetermined time or having time-delay means
252	..Plural, diverse or diversely connected or controlled field coils	286	..Movement or position of motor or driven device
253	HOMOPOLAR OR UNIFORM FIELD MOTORS	287	..Armature or primary circuit control
254	SELF-COMMUTATED IMPULSE OR RELUCTANCE MOTORS	288	..Plural, diverse or diversely controlled armature windings
255	PLURAL DIVERSE MOTOR CONTROLS	289	...Phase-reversal
256	..Motor-reversing	290	...Selectively energized windings
257	..With running-speed control	291	..Armature or primary current reversal
258	...And braking	292	...By shifting motor brushes or selecting appropriate set of brushes
259	...And acceleration control	293	...Reversing polarity of current supplied to armature circuit
260	...And acceleration control	294	....Wheatstone bridge type
261	..With braking	295	....Potentiometer-controlled
262	...And acceleration control	296	..Field circuit control
263	..With acceleration control	297	..Plural, diverse or diversely controlled field windings
264	..With automatic starting and/or stopping	298	...Simultaneous energization
265	...Stopping upon predetermined movement of or position of motor or driven device	299	...With means for short-circuiting a winding
266	....At limit-of-travel of motor or driven device	300	..Field-circuit current reversed
267	.....Dual control circuits alternately energized		
268	..Running-speed control		
269	..With braking		
270	...And acceleration control		
271	..With acceleration control		
272	..With automatic starting and/or stopping		
273	..Motor braking		
274	..With acceleration control		
275	..With automatic starting and/or stopping		
276	..Acceleration control		
277	..With automatic starting and/or stopping		
278	...In response to an electrical condition		
279	....Automatic stopping means less responsive during acceleration		
280	MOTOR-REVERSING		
281	..Periodic- or intermittent-reversing		
282	..In response to movement or position (e.g., limit of travel) of motor or driven device		
283	..Automatic and/or with time-delay means		
			Class 388 subclasses 800-841 are an integral part of this Class (Class 318), as shown by the position of this box, and follows the schedule hierarchy of this Class, retaining all pertinent definitions and Class lines of this class.
		362	BRAKING
		363	.. "Spotting" or adjustment of braking controller during coasting
		364	..Automatic and/or with time-delay means
		365	..Plural diverse conditions or with time delay
		366	..Condition of motor or driven device
		367	...Armature or primary current
		368	...Armature or primary circuit voltage or terminal or counter e.m.f. voltage

369	...Speed, acceleration, movement or position of motor or driven device	438	POWER FACTOR CONTROL OF ARMATURE OR LINE CIRCUIT
370	.Plural, diverse or diversely controlled braking means	439	MOTOR COMMUTATION CONTROL SYSTEMS
371	..Including both friction braking "plugging" and/or dynamic braking	440	HAVING PLURAL, DIVERSE OR DIVERSELY CONTROLLED SOURCES
372	.Friction braking	441	.A.C. and D.C.
373	..Plugging" or application of reverse power to motor	442	.Different voltages
374	..Energy flow interrupted when motor stops	443	PERIODIC, REPETITIOUS OR SUCCESSIVE OPERATIONS CONTROL OF MOTOR, INCLUDING "JOG" AND "INCH" CONTROL
375	.Dynamic braking	444	.Variable periods or intervals between controlling operations
376	..Regenerative	445	AUTOMATIC AND/OR WITH TIME-DELAY MEANS (E.G., AUTOMATIC STARTING AND/OR STOPPING)
377	...With additional source of e.m.f.	446	.With nonautomatic control means (e.g., manual)
378	....In series with armature or primary circuit	447	.Nonresponsive or less responsive for limited periods
379	..Locally closed armature circuit	448	.Anti-hunting
380	...Closed through impedance or the like	449	.With respect to a fixed standard, master or reference device
381	...With field or secondary circuit control	450	..Electrical detector
382	.By auxiliary electric generator or by magnetic attraction or repulsion devices	451	..Mechanically vibrating device as reference device (e.g., tuning fork)
383	"ANTI-BRAKING" OR BRAKING-PREVENTION MEANS	452	.Plural, diverse conditions or with time-delay means
Class 388 subclasses 842-860 are an integral part of this Class (Class 318), as shown by the position of this box, and follows the schedule hierarchy of this Class, retaining all pertinent definitions and Class lines of this class.		453	..Electrical condition
		454	...Plural, diverse electrical conditions
		455	....Voltage and current (e.g., watts)
		456	.Rate-of-change of a condition
		457	..Inertia-type detector
		458	..Electrical condition
		459	.Terminal voltage or counter-electromotive force of controlled motor
430	MOTOR LOAD, ARMATURE CURRENT OR FORCE CONTROL DURING STARTING AND/OR STOPPING	460	.Sound, supersonic vibration or mechanical vibration
431	.Initial, "cracking" or "starting from rest" torque control	461	.Speed or rate-of-movement
432	CONSTANT MOTOR CURRENT, LOAD AND/OR TORQUE CONTROL	462	..Centrifugal-type detector
433	.Control of motor load or device driven	463	..Tachometer-type detector
434	LIMITATION OF MOTOR LOAD, CURRENT, TORQUE OR FORCE (E.G., PREVENTING OVERLOAD)	464	...Electric generator tachometer
436	NONRUNNING, ENERGIZED MOTOR	465	..In excess of a predetermined valve
437	PHASING OR ANGULAR OR LINEAR POSITIONAL CONTROL OF MOVABLE ELEMENT OF THE MOTOR	466	.Movement, position, or limit-of-travel
		467	..Plural sensing means for determining plural positions or plural limits-of travel
		468	..Limit-of-travel control means

469	...Overloading limit-of-travel-type control means	500	.Plural sources of voltage (including counter e.m.f. cells)
470	..Magnitude of movement or revolutions	501	.By shunting armature or primary winding
471	.Responsive to thermal conditions	502	.Variable length or tapped armature winding
472	..Of motor control means	503	.Frequency or pulsation control
473	..In or about the motor being controlled	504	.Voltage control
474	.Motor load, armature or primary or secondary circuit current	505	.By means to space-discharge devices
475	..Mechanical-type detector (e.g., by yielding spring devices)	506	..Plural, diverse or diversely connected or controlled space-discharge devices
476	..In excess of a predetermined magnitude	507	..Having discharge-control means (e.g., grids)
477	...Intentionally increased load	508	.Impedance-controlled
478	.Electrical conditions in circuit other than controlled motor circuit	509	..Plural, diverse or diversely controlled impedances
479	..Voltage	510	...Including both reactor and condenser
480	.Radiant energy	511	..Inherently or self-variable impedance
481	.Pressure in a fluid or granular material	512	..Inductive reactor controlled
482	.Level of fluid or granular material	513	...Having auxiliary means for saturating reactor core
483	.Moisture content or wetness	514	..Resistor-controlled
484	.Time or with time-delay means	515	...Having short-circuiting means
485	..Dash-pot or other mechanical delay means	516	....Short-circuited step-by-step
486	..Pilot- or servo-motors	519	.By armature or primary circuit-making and/or breaking
487	..Electromagnetic or inductive time-delay means	520	..Electromagnetically actuated
488	.Responsive to stress in body or material	521	FIELD OR SECONDARY CIRCUIT CONTROL
489	.Responsive to direction, inclination or angular position of bodies	523	.Plural, diverse or diversely connected or controlled field windings
490	WITH SIGNALS, METERS, RECORDERS OR TESTING DEVICES	524	..Convertible number-of-poles type (e.g., 4-pole or 6-pole)
491	CONTROL OF BOTH MOTOR CIRCUIT AND MOTOR STRUCTURE	525	..Differentially wound or energized windings
492	MOTOR MAGNETIC ENERGY DISSIPATION	526	..Series-parallel
493	CONTROL OF BOTH ARMATURE (OR PRIMARY) CIRCUIT AND FIELD (OR SECONDARY) CIRCUIT	527	..Series field winding
494	ARMATURE (OR PRIMARY) CIRCUIT CONTROL	528	..With means to short circuit a field winding
495	.Plural, diverse or diversely controlled, armature or primary windings	529	..Selectively energized
496	..Polyphase windings	530	.Plural, diverse or diversely connected or controlled sources of field circuit voltage
497	..Series-parallel	531	.Variable length or tapped field winding
498	..Energized or controlled in predetermined sequence	532	.By means of space-discharge device in field circuit
499	..Wound or energized in magnetic opposition	533	.Impedance-controlled

- 534 ..Plural, diverse or diversely
connected or controlled field
circuit impedances
- 535 ...Wheatstone bridge
- 536 .By field circuit making and/or
breaking
- 537 ..Intermittently operated
- 538 **MOTOR STRUCTURE ADJUSTMENT OR
CONTROL**
- 539 .Both armature and field
structures rotatable or
adjustable
- 540 .Rotor element movable axially
- 541 .Brush or other current-collector
control
- 542 ..Having movement toward or from
cooperating part (e.g., brush
lifted from commutator)
- 543 **THREE-OR-MORE-POSITIONS MOTOR
CONTROLLER SYSTEMS**
- 544 .With other motor control device
- 545 ..Main line switch
- 546 .Plural, diverse or diversely
controlled controllers
- 547 ..Plural control stations
- 548 .Plural control stations
- 549 .Return to "off", "starting" or
"neutral" positions
- 550 ..Power-operated controllers
- 551 .Knee- or foot-operated
controllers
- 552 .Power-actuated controllers
- 553 ..Separately actuated controller
contacts
- 554 ...Electromagnetic actuated
- 555 ..Electromagnetic actuated
- 556 ...Reciprocating or oscillating
electromagnetic means
- 557 ...Intermittent or step-by-step
operation
- 558 **MISCELLANEOUS**

FOREIGN ART COLLECTIONSFOR 000 **CLASS-RELATED FOREIGN DOCUMENTS****DIGESTS**DIG 2 **WINDSHIELD WIPER CONTROLS**

